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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/896,439	06/29/2001	Kenneth P Wilson	1082-143	8247

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EXAMINER	
MUSSER, BARBARA J	

ART UNIT	PAPER NUMBER
1733	

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/896,439	WILSON, KENNETH P	
	Examiner	Art Unit	
	Barbara J. Musser	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 May 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Specification

1. The substitute specification has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 6 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear how the ablative material is used as a lining as required by the independent claims when used as a vehicle nose cone since the ablative material would be placed on the exterior of the nose cone.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Ferrier nee Pegot et al.(U.S. Patent 5,368,906).

The reference discloses winding fiber around a mandrel and impregnating it with resin to form thermal protection for the interior of a jet engine.(Abstract; Col. 1, ll. 27-30; Col. 2, ll. 21-43) The fiber can be aromatic polyamide.(Col. 3, ll. 17-18) The fiber forms a reinforcement for the resin.(Col. 1, ll. 27-31)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-7 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Binning et al.(U.S. Patent 3,699,210)

The admitted prior art discloses carbonizing a viscose rayon woven mat, impregnating it with a resin, and lining the interior of a rocket nozzle with the impregnated material. However, such material is no longer available.(Specification, Pg. 1-2) The admitted prior art does not disclose carbonizing a polyaramid mat. Binning et al. discloses carbonizing a polyaramid fiber mat and impregnating them with resin.(Col. The fibrous mat can then be used for nose cones or rocket nozzle exhausts.(Col. 1, ll. 35; Col. 2, ll. 39-43) A less preferred fiber is rayon.(Col. 3, ll. 26) It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the rayon of the admitted prior art with polyaramid since rayon is no longer available and since Binning et al. prefers polyaramid to rayon and particularly since Binning et al.

discloses such material can be used in the same type of environments as applicant's. It is noted that the fibers form a flexible layer(Col. 1, ll. 28) and thus one in the art would appreciate that theses materials were intended to be used insulation.

Regarding claims 2 and 3, Binning et al. describes the fibers as yarn.(Col. 4, ll. 20) This suggests the fibers are carded and yarn-spun as that is how yarn is formed. Additionally, one in the art would appreciate that the fiber would be formed via any conventional method such as carding and yarn-spinning. Absent unexpected results this is considered obvious.

Regarding claim 4, Binning et al. discloses the fibers can be in a matted form.(Col. 3, ll. 38-40) Felts and flocks are made of matted fibers.

Regarding claims 5 and 6, the Binning et al. discloses the fibers can be used in rocket nozzles and nose cones.(Col. 2, ll. 39-40) Since the material is flexible(Col. 1, ll. 28), one in the art would appreciate that the material would be used as a lining for the nozzle and nose cone rather than forming the external surface.

Regarding claim 13, Binning et al. describes the fibers as yarn.(Col. 4, ll. 20)

Regarding claim 15, Binning et al. discloses carbonizing the fibers.(Abstract)

8. Claims 7-12 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art and Binning et al. as applied to claim 1 above, and further in view of Hirsch et al.(U.S. Patent 3,576,769).

The references cited above do not disclose the polyaramid being poly(m-phenyleneisophthalamide)[NOMEX] though Binning et al. does disclose the polyaramid can be a phenylene which is not ortho.(Col. 1, ll. 52-54) Hirsch et al. discloses

carbonizing polyaramid to form ablative composites wherein the polyaramid can be NOMEX.(Abstract; Col. 3, ll. 9-10) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any type of polyaramid such as NOMEX as the polyaramid in the admitted prior art and Binning et al. since Binning et al. discloses using polyaramids having phenylenes which are not ortho, since Binning et al. does not indicate only specific polyaramids can be used, and since Hirsch et al. shows that NOMEX is known in the art as a heat-resistant material.(Abstract) Absent unexpected results, this is considered obvious.

Regarding claims 8 and 9, Binning et al. describes the fibers as yarn.(Col. 4, ll. 20) This suggests the fibers are carded and yarn-spun as that is how yarn is formed. Additionally, one in the art would appreciate that the fiber would be formed via any conventional method such as carding and yarn-spinning. Absent unexpected results this is considered obvious.

Regarding claim 10, Binning et al. discloses the fibers can be in a matted form.(Col. 3, ll. 38-40) Felts and flocks are made of matted fibers.

Regarding claims 11 and 12, the Binning et al. discloses the fibers can be used in rocket nozzles and nose cones.(Col. 2, ll. 39-40) Since the material is flexible(Col. 1, ll. 28), one in the art would appreciate that the material would be used as a lining for the nozzle and nose cone rather than forming the external surface.

Regarding claim 16, Binning et al. describes the fibers as yarn.(Col. 4, ll. 20)

Regarding claim 18, Binning et al. discloses carbonizing the fibers.(Abstract)

9. Claims 1-7 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Binning et al.(U.S. Patent 3,699,210) in view of the admitted prior art.

Binning et al. discloses carbonizing a polyaramid fiber mat and using it with resin. The mat can then be used for nose cones or rocket nozzle exhausts.(Col. 1, ll. 35; Col. 2, ll. 39-43; Col. 3, ll. 22-40) The reference does not specifically state the mat is impregnated with resin. However, it does disclose the fibers can be employed with resin.(Col. 2, ll. 41-42) The conventional way of employing resin with fibrous mats is by impregnating the fibers with the resin as shown for example by the admitted prior art which discloses carbonizing a viscose rayon woven mat, impregnating it with a resin, and lining the interior of a rocket nozzle with the impregnated material.(Specification, Pg. 1-2) It would have been obvious to one of ordinary skill in the art at the time the invention was made to impregnate the fiber mat of Binning et al. with resin since this is the conventional method of employing resin with fiber and since Binning et al. suggests the use of resin with fiber. The reference discloses the material can be used as an ablative nose cone. Therefore, one in the art would understand that the material was ablative. The reference also does not specifically disclose the mat is used as a lining. However, since it is used in the same locations as applicant, i.e. as a nose cone and in a rocket exhaust nozzle, one in the art would appreciate that it would also be a lining as applicant's is.

Regarding claims 2 and 3, Binning et al. describes the fibers as yarn.(Col. 4, ll. 20) This suggests the fibers are carded and yarn-spun as that is how yarn is formed. Additionally, one in the art would appreciate that the fiber would be formed via any

conventional method such as carding and yarn-spinning. Absent unexpected results this is considered obvious.

Regarding claim 4, Binning et al. discloses the fibers can be in a matted form.(Col. 3, ll. 38-40) Felts and flocks are made of matted fibers.

Regarding claims 5 and 6, Binning et al. discloses the fibers can be used in rocket nozzles and nose cones.(Col. 2, ll. 39-40) Since the material is flexible(Col. 1, ll. 28), one in the art would appreciate that the material would be used as a lining for the nozzle and nose cone rather than forming the external surface.

Regarding claim 13, Binning et al. describes the fibers as yarn.(Col. 4, ll. 20)

Regarding claim 15, Binning et al. discloses carbonizing the fibers.(Abstract)

10. Claims 7-12 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Binning et al. and the admitted prior art as applied to claim 1 above, and further in view of Hirsch et al.(U.S. Patent 3,576,769).

The references cited above do not disclose the polyaramid being poly(m-phenyleneisophthalamide)[NOMEX] though Binning et al. does disclose the polyaramid can be a phenylene which is not ortho.(Col. 1, ll. 52-54) Hirsch et al. discloses carbonizing polyaramid to form ablative composites wherein the polyaramid can be NOMEX.(Abstract; Col. 3, ll. 9-10) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any type of polyaramid such as NOMEX as the polyaramid in the admitted prior art and Binning et al. since Binning et al. discloses using polyaramids having phenylenes which are not ortho, since Binning et al. does not indicate only specific polyaramids can be used, and since Hirsch et al.

shows that NOMEX is known in the art as a heat-resistant material.(Abstract) Absent unexpected results, this is considered obvious.

Regarding claims 8 and 9, Binning et al. describes the fibers as yarn.(Col. 4, ll. 20) This suggests the fibers are carded and yarn-spun as that is how yarn is formed. Additionally, one in the art would appreciate that the fiber would be formed via any conventional method such as carding and yarn-spinning. Absent unexpected results this is considered obvious.

Regarding claim 10, Binning et al. discloses the fibers can be in a matted form.(Col. 3, ll. 38-40) Felts and flocks are made of matted fibers.

Regarding claims 11 and 12, Binning et al. discloses the fibers can be used in rocket nozzles and nose cones.(Col. 2, ll. 39-40) Since the material is flexible(Col. 1, ll. 28), one in the art would appreciate that the material would be used as a lining for the nozzle and nose cone rather than forming the external surface.

Regarding claim 16, Binning et al. describes the fibers as yarn.(Col. 4, ll. 20)

Regarding claim 18, Binning et al. discloses carbonizing the fibers.(Abstract)

Response to Arguments

11. Applicant's arguments filed 5/12/03 have been fully considered but they are not persuasive.

Regarding applicant's argument the Binning et al. does not disclose forming a reinforcement structure prior to carbonization, Binning et al. discloses the fibers can be formed into a mat or woven fabric which are the same types of structures applicant

defines as reinforcement structures.[0027]-[0028] These materials can then be carbonized.(Col. 3, ll. 22-45)

Regarding applicant's argument that Binning et al. does not disclose the aramid has the desired ablative and thermal properties for use as a rocket motor ablative material, the reference discloses the material can be used for ablative nose cones and rocket exhaust nozzles just as applicant does. Therefore, since it is used for the same purposes as applicant, it would have the same thermal and ablative properties. Additionally, applicant has not claimed any specific properties other than use as a nose cone or exhaust nozzle and Binning et al. discloses the material can be used as a nose cone or exhaust nozzle.(Colo. 2, ll. 38-40) Finally, Binning et al. discloses the material can be used for ablative nose cones, indicating it is an ablative structure.

Regarding applicant's argument the Hirsch does not disclose impregnating the polyaramid, the reference is used to shows that NOMEX was known in the ablative arts to be a heat-resistant material.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Barbara J. Musser** whose telephone number is **(703)-305-1352**. The examiner can normally be reached on Monday-Thursday; alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on 703-308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

BJM
July 25, 2003

Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700